

* SWBAT describe the forces in falling and terminal velocity

Sep 6-2:31 PM

Welcome!!!

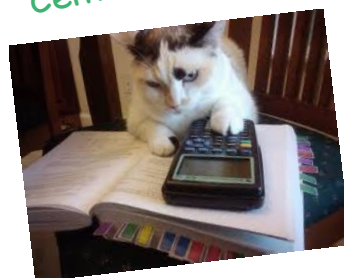
H. Leslie Grebe

SECA Physics
Thursday 22 October 2015

* Pick up:

- slip of paper (for later)
- sheet of Cornell Notepaper

Centering...



Opening Question:

A car takes 2 seconds to speed up from 35 mph to 45 mph, what is its acceleration?

$$a = \frac{\Delta v}{\Delta t} = \frac{45 \frac{\text{mi}}{\text{hr}} - 35 \frac{\text{mi}}{\text{hr}}}{2 \text{ sec}} = \frac{10 \frac{\text{mi}}{\text{hr}}}{2 \text{ sec}} = 5 \text{ mi/hr/s}$$

Sep 7-7:04 AM

Catchy Physics Phrases: Speed, Velocity, Acceleration

Speed is

Change in distance over
change in time

Velocity is

Speed with direction

Acceleration is

Change in **velocity** over
change in time

Oct 4-7:27 AM

Of falling books and feathers...

- Make a prediction with brief explanation
- Make an observation

SPREAD OUT WASHERS

MADE AN EVEN SOUND ON PAN

LONGER OR FARTHER SOMETHING
FALLS, THE MORE DISTANCE IT COVERS PER SECOND
⇒ GRAVITY SPEEDS
THINGS UP

Book and Feather (boring):

Golf ball and ping pong ball:

2 Kleenex:

So, how could we get book and feather to fall the same???

Terminal Velocity: equilibrium (balanced forces)
when falling.



Oct 5-7:33 AM

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AVID
Decades of College Dreams

FALLING OBJECTS DATE: TH 10/22

ESSENTIAL QUESTION: WHAT MAKES SOME THINGS FALL FASTER THAN OTHERS?

QUESTIONS:

NOTES:

GRAVITY SPEEDS THINGS UP
⇒ ACCELERATION

BOOK VS. FEATHER

WHY: HEAVIER MORE DENSE
MASS, WEIGHT - GRAVITY

GOLF BALL VS. PING PONG BALL

SAME SHAPE DIFFERENT
SAME SIZE MASS, WEIGHT

FLAT KLEENEX VS. CRUMPLED KLEENEX
SAME WEIGHT DIFFERENT AREA
SAME MASS SHAPE

PRED. OBSV.
BOOK BOOK
TIE
CRUMPLED

Oct 22-12:36 PM

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CORNELL NOTES

AVID
Decades of College Dreams

TOPIC/OBJECTIVE: **FALLING OBJECTS** NAME:

CLASS/PERIOD: DATE: TH 10/22/15

ESSENTIAL QUESTION: WHAT MAKES SOME THINGS FALL FASTER THAN OTHERS?

QUESTIONS:

NOTES:

GRAVITY SPEEDS THINGS UP
⇒ ACCELERATION

BOOK VS. FEATHER

GUESS WHY: HEAVIER
WEIGHT → GRAVITY
MORE MASS

PREDICTION OBSERVATION
BOOK

Oct 22-10:43 AM

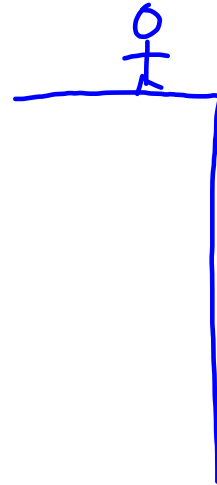
Falling objects...

Spread out washers made evenly spaced sound

=> Things speed up as they fall

=> Objects cover more distance each second after being released

gravity accelerates



FEATHER & BALL IN VACUUM

<http://www.youtube.com/watch?v=4z8g8OSOMzY>

FEATHER & HAMMER ON MOON

http://www.youtube.com/watch?v=SC5_dOEyAfk

SKIDNING

<http://www.youtube.com/watch?v=ur40O6nQHsw>

TIME LEFT? POSN, VEL, & ACC IN FOOTBALL

<http://www.nbclearn.com/nfl>

Oct 10-7:53 AM

Daily 3 Questions

- * Every day except test/project days
- * 3 Questions on the topics of the day
- * Main source of daily points
- * I am happy to give credit when I have no concerns about someone giving or getting help with the answers.

You can't get your points if you don't have your **NAME!!!**

Name	Period
1.	
2.	
3.	

Sep 9-7:32 AM

- As far as we could tell, which consistently hit the ground first?
 - the heavier golf ball
 - the lighter ping pong ball
 - it was a tie

- When there is no air resistance, which is accelerated more?
 - a heavy object (hammer, metal ball, book) *HITS THE GROUND FIRST*
 - a light object (feather)
 - they are accelerated the same

- What causes some objects to fall slower?
 - Weight only
 - Air resistance
 - Inertia

Oct 8-7:33 AM

Falling Objects Cornell notes sheet.pdf - Adobe Reader

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Questions:	Notes:
	<u>GRAVITY</u> SPEEDS THINGS UP → ACCELERATION
	BOOK VS. FEATHER GUESS WHY? <u>HEAVIER</u> <u>FLOATING</u> <u>AIR PUSHING</u> <u>SHAPE</u>
	GOLF BALL VS. PING PONG SAME <u>SHAPE</u> SAME <u>VOLUME</u> DIFFERENT <u>MASS</u>
	FLAT KLEENEX VS. CRUMPLED KLEENEX SAME <u>VOLUME</u> SAME <u>MASS</u> DIFFERENT <u>SHAPE</u>
	→ HOW COULD BOOK & FEATHER TIE? <u>IN / ON BOOK, MOON, VACUUM JAR</u>
	<u>TERMINAL VELOCITY</u> IS THE NAME FOR EQUILIBRIUM (BALANCED FORCES) WHEN FALLING.

Diagram: A vertical stack of three boxes representing falling objects. The top box is labeled 'BOOK' and has 'PREDICT' written above it. The middle box is labeled 'TIE' and has '~' written next to it. The bottom box is labeled 'BALL' and has 'OBS.' written next to it. To the right of the boxes, there are labels 'FAIR' and 'F_{GRAV}' with arrows pointing upwards.

Oct 9-11:31 AM